REMARKS

Status of the Application; Claim Amendment; and New Claims

Prior to entry of this amendment, claims 1-2 and 33-45 are pending in the application. The previously added claims 1, 4-13, 23-27, and 31-45 are withdrawn from consideration by the Examiner as directed to a non-elected invention. Claims 2 is rejected.

With entry of this amendment, claim 2 has been amended, and new claims 46-55 have been added. Therefore, claims 2 and 46-55 are now pending and under consideration in the application.

The amendment to claim 2 has support in the specification, e.g., at page 9, line 14 and in claim 1 as filed. New independent claim 49 has support in the specification, e.g., at page 34, lines 9-10. New claims 46-48 and 50-52 depend from claims 2 and 49, respectively, and recite one of the SEQ ID NOs set forth in the main claims. New claims 53 - 54 have support in the specification, e.g., at page 10, line 29 to page 11, line 5. New claim 55 has support, e.g., at page 11, lines 5-8.

Unless otherwise noted, claim amendment and addition of new claims are made for improved clarity or for purposes of expediting prosecution, and should not be viewed as an acquiescence in any ground of rejection. No new matter has been introduced by the claim amendment and new claims.

The following remarks address issues raised in the Office Action.

Election/Restriction

The Examiner says that claim 1 as amended and claims 33-45 submitted in the previous response are independent and distinct from the invention originally elected. Accordingly, these claims were withdrawn by the Examiner from consideration as directed to a non-elected invention. For the reasons stated below, Applicants respectfully submit that the instant restriction is improper.

According to the MPEP, there are two criteria for a proper Restriction Requirement: (1) the inventions must be independent or distinct as claimed, and (2) there must be a serious burden on the Examiner if restriction is not required (MPEP § 803). If two or more subjects are related rather than independent, they are deemed "distinct" only if they "are

capable of separate manufacture, use, or sale as claimed, AND ARE PATENTABLE (novel and unobvious) OVER EACH OTHER . . ." (MPEP § 802.01; emphasis original).

It is submitted that claim 1 (as previously amended) and claims 33-45 are clearly not independent of the originally presented claims. Rather, these claims are directed to closely-related subject matter as the previously elected invention, e.g., polynucleotides with sequences similar or identical to SEQ ID NOs. 2, 4, and 6. Patentability of the claims directed to sequences that hybridize under stringent conditions to SEQ ID NOs. 2, 4, or 6 would likely indicate the patentability of claims directed to sequences that encode the corresponding amino acid sequences (SEQ ID NOs 1, 3, or 5, respectively) or fragments thereof. Nor is the subject matter encompassed by claim 1 (as amended) and claims 33-45 distinct from the originally elected claims because they are not necessarily patentable over the other pending claims.

As to burden on the Examiner, the subject matter encompassed by claim 1 and claims 33-45 are not in different art classes, or even subclasses for some of the nucleic acids as acknowledged by the Examiner. Because these claims encompass such closely related same subject matter, all prior art relevant to these claims should reasonably have been encompassed by the search already performed with respect to the originally elected claims.

For these reasons, Applicants respectfully request that restriction of claims 1 and 33-45 be withdrawn.

Claim rejections under 35 U.S.C. 101 and 35 U.S.C. § 112, first paragraph, enablement

The Examiner maintains the rejection of claim 2 as allegedly lacking utility, and as a result, non-enabled. In dismissing Applicants' previously submitted argument as not persuasive, the Examiner says that "in the instant case the nucleic acid is not isolated and there is no reflection of an invention by the hand of man, but merely a recitation of a naturally occurring compound." The Examiner also states that "the peptide encoded by the claimed SEQ ID NO's is merely identified as originating from the interphotoreceptor matrix of the neural retina" and that "the peptide is not specified to provide a useful product, i.e., there is no disclosed enzymatic activity, or functional property which provides immediate benefit to the public." The Examiner further says that "[a]pplicants merely argue that the IPM peptide is important to the maintenance of normal functions of the neural retina but there is no direction

as to how the peptide can be used to provide for normal function, particular diseased state" and that "the specification fails to disclose any disease or abnormality associated with or treated by the use of the claimed nucleic acids or peptide encoded thereby." Applicants respectively traverse the rejection and will address each of the Examiner's above statements below.

First of all, the presently claimed nucleic acids (e.g., as recited in independent claims 1, 2, and 49) are not "naturally occurring" compounds that are not "an reflection by the hand of man." Rather, the present claims are directed to "isolated" or "recombinant" nucleic acids. As evidenced in the specification (e.g., page 104), the exemplified embodiments of the presently claimed nucleic acids were isolated and characterized (e.g., sequence analysis) by cloning and subsequent manipulation with molecular biology techniques. Absent the biochemical characteristics of the claimed nucleic acids (e.g., sequence information) that were identified by Applicants' inventive effort, one would not be able to make such nucleic acids from "a naturally occurring compound."

In addition, disclosure of functions of the claimed IPM molecules in the specification is not limited to a mere suggestion of their importance in maintenance of normal functions of the neural retina. Instead, the subject specification provides ample teachings of the specific biological functions and utilities of the IPM molecules. For example, the specification discloses that IPMC proteins (e.g., IPM150) contain hyaluronan-binding motifs, that hyaluronan is an IPM component, and that hyaluronidase disrupts CMSs *in vitro* and weakens retinal adhesion *in vivo* (see, e.g., page 20, line 28 to page 21, line 3) The specification also teaches that hyaluronan could stabilize the IPM through interactions with CD44, IPM150, IPM200 and perhaps other insoluble IPM constituents, and that IPM150 could interact with hyaluronan to effect retinal adhesion (see, e.g., page 21, lines 3-9).

Further, the specification also teaches that the IPM proteins (e.g., IPM150) has EGF-like domains, motifs that are present in many extracellular matrix proteins. It is known that such domains promote the survival of neighboring cells and that IPM is important in maintaining photoreceptor cell viability. The subject specification discloses that the EGF-like domains of IPM150 could promote photoreceptor viability *in vivo* (see, e.g., page 19, line 24 to page 20, line 2).

Moreover, contrary to what is asserted in the Office Action, the specification specifically discloses various ocular disorders that are associated with the IPM molecules. For example, the subject specification teaches that IPMC mutations could cause or contribute to the development such as retinal detachment or macular degeneration (e.g., page 81, line 29 to page 82, line 2). The specification also sets forth various mutations that led to such abnormalities (see, e.g., page 82, lines 3-9).

Applicants respectfully note that, as acknowledged by the MPEP, the utility requirement only mandates a reasonable correlation between a disclosed biological activity and a disease state (see, MPEP § 2107-I). The Supreme Court has explicitly held that "office personnel also must be careful not to interpret that phrase 'immediate benefit to the public' or similar formulations in other cases to mean that products or services based on the claimed invention must be 'currently available' to the public in order to satisfy the utility requirement." See, e.g., *Brenner v. Manson*, 383 U.S. 519, 534-35, 148 USPQ 689, 695 (1966) (emphasis added); see also, MPEP § 2107-I.

The Federal Circuit has also repeatedly found utility for inventions where an applicant is at a very early stage in the development of a pharmaceutical product based on a claimed bioactive composition. See, e.g., *Cross v. Iizuka*, 224 USPQ 739, 747-48 (Fed. Cir. 1985); and *In re Brana,* 34 USPQ2d 1436, 1441 (Fed. Cir. 1995); see also, MPEP § 2107-III. Consistently, the MPEP states that "[t]hese general principles are equally applicable to situations where an applicant has claimed a process for treating a human or animal disorder. In such cases, the asserted utility is usually clear, the invention is asserted to be useful in treating the particular disorder. If the asserted utility is credible, there is no basis to challenge such a claim on the basis that it lacks utility under 35 U.S.C. 101" (MPEP § 2107-III, emphasis original).

Based on the teachings of the subject specification as clarified above, there is no doubt that the presently claimed IPM molecules has real world utilities that are substantial, credible, and specific. For example, as disclosed in the specification, they could find applications in diagnosing (e.g., by detecting a mutation in the IPM molecules or an abnormal expression of the IPM molecules) and treating (e.g., in gene therapy) ocular disorders that are associated with abnormal retinal adhesion, such as retinal detachment and macular

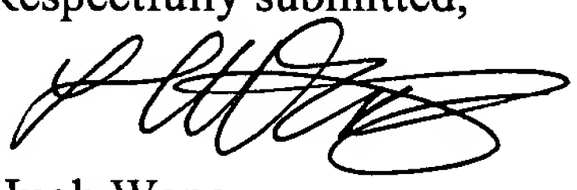
degeneration. Such specific and substantial utilities of the present claimed nucleic acids are clearly credible in view of the disclosures of the subject specification and knowledge already known in the art. Accordingly, Applicants submit that the presently claimed invention has a patentable utility that satisfies the requirement of 35 U.S.C. 101 and respectfully request withdrawal of the instant rejection.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400 x 5209.

Respectfully submitted,



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Appendix Marked-up version of pending claims

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Appendix Marked-up Version of Pending Claims
(claims unamended herewith appear in small font)

1. An isolated or recombinant nucleic acid comprising a nucleotide sequence or its complement, wherein said nucleotide sequence encodes:

(a) a polypeptide comprising at least 72 contiguous amino acid residues of SEQ ID NO:6;

(b) a polypeptide comprising at least 180 contiguous amino acid residues of SEQ ID NO:4; or

(c) a polypeptide comprising at least 10 contiguous amino acid residues of SEQ ID NO:2.

2. (Amended) A **recombinant or isolated** nucleic acid comprising **[the] a** sequence set forth in SEQ ID NO:1, 3 or 5.

33. The nucleic acid of claim 1, comprising a nucleotide sequence or its complement, wherein said nucleotide sequence encodes a polypeptide comprising at least 72 contiguous amino acid residues of SEQ ID NO:6.

34. The nucleic acid of claim 1, comprising a nucleotide sequence or its complement, wherein said nucleotide sequence encodes a polypeptide comprising at least 180 contiguous amino acid residues of SEQ ID NO:4.

35. The nucleic acid of claim 1, comprising a nucleotide sequence or its complement, wherein said nucleotide sequence encodes a polypeptide comprising at least 10 contiguous amino acid residues of SEQ ID NO:2.

36. An isolated or recombinant nucleic acid comprising a nucleotide sequence or its complement, wherein said nucleotide sequence encodes:

(a) at least 10 contiguous amino acid residues from residues 42-215 of SEQ ID NO:4;

(b) at least 136 contiguous amino acid residues from residues 221-565 of SEQ ID NO:4;

(c) at least 20 contiguous amino acid residues from residues 591-630 of SEQ ID NO:4;

(d) at least 10 contiguous amino acid residues from residues 688-731 of SEQ ID NO:4; or

(f) at least 5 contiguous amino acid residues from residues 735-743 of SEQ ID NO:4.

37. The nucleic acid of claim 36, wherein said nucleotide sequence encodes at least 10 contiguous amino acid residues from residues 42-215 of SEQ ID NO:4.

38. The nucleic acid of claim 36, wherein said nucleotide sequence encodes at least 136 contiguous amino acid residues from residues 221-565 of SEQ ID NO:4.

39. The nucleic acid of claim 36, wherein said nucleotide sequence encodes at least 20 contiguous amino acid residues from residues 591-630 of SEQ ID NO:4.

40. The nucleic acid of claim 36, wherein said nucleotide sequence encodes at least 10 contiguous amino acid residues from residues 688-731 of SEQ ID NO:4.

41. The nucleic acid of claim 36, wherein said nucleotide sequence encodes at least 5 contiguous amino acid residues from residues 735-743 of SEQ ID NO:4.

42. The nucleic acid of claim 36, wherein said nucleotide sequence encodes residues 42-215, 221-565, 591-630, 688-731, or 735-743 of SEQ ID NO:4.

43. A kit useful for the detection of an IMPC nucleic acid in a biological sample, comprising one or more nucleic acid of claim 1 or 36.

44. The kit of claim 43, wherein the nucleic acid is a probe.

45. The kit of claim 44, wherein the probe is detectably labeled.

46. (New) The nucleic acid of claim 2, comprising the sequence set forth in SEQ ID NO:1.

47. (New) The nucleic acid of claim 2, comprising the sequence set forth in SEQ ID NO:3.

48. (New) The nucleic acid of claim 2, comprising the sequence set forth in SEQ ID NO:5.

49. (New) A recombinant or isolated nucleic acid comprising a sequence that is complementary to SEQ ID NO:1, 3 or 5.

50. (New) The nucleic acid of claim 49, comprising a sequence that is complementary to SEQ ID NO:1.

51. (New) The nucleic acid of claim 49, comprising a sequence that is complementary to SEQ ID NO:3.

52. (New) The nucleic acid of claim 49, comprising a sequence that is complementary to SEQ ID NO:5.

53. (New) A vector comprising a nucleic acid having the sequence set forth in SEQ ID NO: 1, 3, or 5.

54. (New) The vector of claim 53, where said nucleic acid is operably linked to a transcriptional regulatory sequence.

55. (New) A host cell transfected with the vector of claim 53.